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For Information: Don Kennedy, 410-436-7118 26 April 2013

Environmental chambers test military equipment against natural elements

Faster, more durable Warfighter equipment tested under harsh conditions

ABERDEEN PROVING GROUND, Md. – In a given work day Audrey Moberly and Greg Carter can visit the tropics, freeze in the Arctic or survive a sandstorm. As engineers within the Environmental and Field Test Branch (EFTB), they spend time walking in and out of the branch's 26 environmental test chambers, assisting groups within and outside of the U.S. Army Edgewood Chemical Biological Center to ensure that their military equipment-from backpacks to masks and detectors-can withstand any natural elements.

"We are here to do the hard testing to ensure that the equipment being sent to our Warfighters can last through harsh environmental elements," said Moberly, who has been with the EFT Branch for 17 years. The testing chambers include temperature/humidity, salt fog, sand/dust, solar radiation, altitude, hot environmental, cold environmental and rain. The temperature chambers range from negative 60 degrees Fahrenheit to 300 degrees Fahrenheit with humidity levels ranging from two to nearly 100 percent.

"There are many elemental factors that engineers need to be mindful of when creating and designing a product. It goes beyond just the climate of the area where they will be using the equipment," said Moberly.

"We have to account for the travel to the location. For example, will be driven through a mountain terrain in a box at the back of a hot vehicle for a couple hours, or maybe a small cold space? Our facilities simulate everything from the final destination climate to any natural factors that could pose a problem while traveling there."

The group uses Shock, Vibration and Rough Handling Testing to simulate the travel of equipment. "We are able to test secured steady state or transient vibration and loose cargo tests," said Carter.

Vibration testing is controlled in a separate room with computer analog equipment where the engineers can observe the testing environment, and adjust conditions. The group can videotape testing for future documentation. The vibration testing complies with the American Society for Testing of Materials Test Standards and Military, Federal and

Commercial test standards. In case a precious piece of equipment falls, EFTB's Drop Tests can be conducted from up to 40 feet. EFTB can also conduct Altitude Testing, which is a low pressure test that can be conducted up to 45,000 feet. One version of the Altitude Test is a Rapid Decompression to simulate a sudden loss of pressure in an aircraft. EFT's testing facilities have been used to test the Joint Service Aircrew Mask, Joint Service General Purpose Mask, RV vehicles for the Joint Program Manager for Nuclear, Biological and Chemical Contamination Avoidance, and many others.

"We support other teams and branches with testing their equipment. Our space is always here," Moberly said. Sometimes the space might be used, but not the chambers.

Recently, members of ECBC's Test, Reliability and Engineering Branch and the Project Manager for Force Protection utilized the large space in EFT's warehouse to test their Lighting Kit Motion Detectors. The group needed a large space with enough room for someone to run around and test the sensors, a task that is typically done outdoors. Due to cold weather the group was still able to conduct the testing they needed indoors.

As resources change, equipment needs to be sent to Warfighters faster and be more durable for whatever comes. Environmental and Harsh Testing complies with Military Standard 810G of Materials Test Standards. "We can replicate almost any environment on Earth," said Moberly. "Just tell us where you want to go.

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ECBC is the Army's principal research and development center for chemical and biological defense technology, engineering and field operations. ECBC has achieved major technological advances for the warfighter and for our national defense, with a long and distinguished history of providing the Armed Forces with quality systems and outstanding customer service. ECBC is a U.S. Army Research, Development and Engineering Command laboratory located at the Edgewood Area of Aberdeen Proving Ground, Maryland. For more information about the Edgewood Chemical Biological Center, please visit our website at http://www.ecbc.army.mil or call (410) 436-7118.

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